

# V.Ships Leisure (UK) LTD

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Received By  
Division of Water

JUN 13 2008

Department of  
Environmental Conservation

Southampton, April 4<sup>th</sup> 2008

Our ref.: 2008/012/SSM/ACG

Subject: General Permit – Source Reduction Evaluation

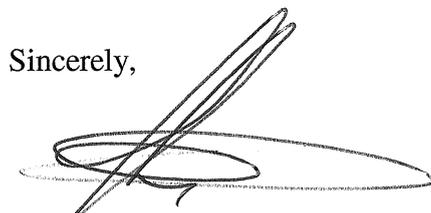
Dear Sir/ Madam,

Herewith please find enclosed the Source Reduction Evaluation, as per General Permit requirement, relative to the passenger ship Seven Seas Mariner, Call Sign C6VV8 – Regent Seven Seas Cruises.

For good order please note that since June 1<sup>st</sup> 2008, Celtic Pacific UK Ltd appointed V. Ships Leisure UK Ltd, as technical/ISM managers of the vessel. Contacts details remain unchanged.

Please do not hesitate to contact as you deem it necessary.

Sincerely,



Alex Garbarino  
Safety & QMS Manager

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## SEVEN SEAS MARINER -SOURCE REDUCTION EVALUATION

Pursuant to section 1.9.1 in Alaska Department of Environmental Conservation Large Commercial Passenger Vessel Wastewater Discharge Permit No. 2007DB0002, V.Ships Leisure UK Ltd, on behalf of Regent Seven Seas Cruises is requesting approval from the Department to discharge the following parameters – ammonia, copper and zinc – at concentrations in compliance with the interim limits for these constituents as identified in the referenced permit.

Pending this approval, V.Ships Leisure (UK) Ltd is submitting this Source Reduction Evaluation (SRE) to identify methods to reduce the presence of these constituents in the discharges authorized by this permit. It should be recognized that this Source Reduction Evaluation plan has been developed in response to the General Permit issued March 25, 2008. As such, it is anticipated that this plan will be updated and amended as further information is gathered in the process of completing this evaluation.

### **Source Reduction Evaluation Overview**

Efforts under our plan will fall into one of two categories of activities:

1. Source Reduction of inflows to reduce introduction of constituents to the waste water stream
2. Technology Evaluation / Implementation to identify and install (as necessary) technology to reduce effluent concentrations.

It should be noted that technology solutions are not yet commercially available for application on a large cruise ship, and therefore at present there remains much uncertainty in the evaluation and potential implementation of such technologies.

Activities under each of these categories is described further below:

## **Influent Source Reduction Evaluation**

A source reduction evaluation will include:

- Cleaning Products, rodenticides, pesticides, other industrial products
  
- Drinking water supply:  
Vessel will be loading fresh water in Skagway, Juneau, Seward and Ketchikan  
Copper is heavily present in the fresh water bunkered in Alaskan ports. An alternative will be to increase slightly the onboard fresh water production and decrease bunkering in Ketchikan.
  
- Alternative cleaning products  
Chemical products with less nitrogen contents.
  
- Adoption of operational practises to reduce pollutant:  
  
Reducing ammonia by biological reduction, by means of increasing the wastewater retention on board and reduce the load on the MBR treatment. That will maximise the wastewater treatment process of the unit.  
  
Heavy metals reduction by continuous monitoring of the corrosion status of on board pipe work.
  
- Substitution of non chemical methods for methods that involve chemicals.

The purpose will be to identify potential sources of copper, zinc and ammonia as they may enter the waste water stream, and to investigate and implement means to reduce their presence in the influent to the Advanced Waste Water Purification Systems (AWWPS) on board. The major phases of this evaluation will be:

- Document influent to waste streams as potential sources:  
Most significant cleaning or other chemicals in terms of volume and/or concentration of constituents  
Source water evaluation  
Other potential contributors  
**To be completed by December 30<sup>th</sup>, 2008**
- Evaluation and estimation of potential contributions from cleaning products or source water to copper, zinc, ammonia in the effluent?  
**To be completed by December 30<sup>th</sup>, 2008.**
- Identification of potential product / source water substitution to reduce constituent concentrations or environmental loading.  
**To be completed by December 30<sup>th</sup>, 2008.**

### **Treatment Technology Evaluation**

Identification of potential treatment technologies for addressing the target constituents is both more complex than, and yet will be considerably informed by, the influent source reduction evaluation described above. Therefore during the next 24 months (Cruise Ship Company) will work with our AWWPS vendors and evaluate additional treatment technologies as may be appropriate for reduction of these pollutants that are practicable for implementation in a cruise ship environment. We will update this plan and report on our technology evaluation progress by **December 30, 2008.**